

Virtually Enterprising Project NSW 2012

Case Study

TAFE NSW - North Coast Institute



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1.0 Background

1.1 Who we are

Lead organisation: North Coast Institute of TAFE

NC TAFE is made up of 17 campuses stretching approximately 700-800kms along the east coast of Australia from Kingscliff to Taree. Our organisation delivers training in most known industry areas and across all known training delivery modes, including internationally.



Partner organisation: Virtual Enterprise Australia

VE Australia offers The Virtual Enterprise Program - an opportunity to get students experienced in business without the risks of running a real business. Virtual Enterprises exists right across Australia & internationally.



1.2 Scope

The Virtually Enterprising Project was undertaken to trial a virtual world platform on high capacity bandwidth connections (NBN).



1.3 Objectives

- To create a virtual world space where Virtual Enterprise (VE) learners from Coffs Harbour & Taree campuses can pilot, trial and provide feedback on the effectiveness of the virtual world environment for engaging and providing learning for VE students.
- To test the virtual world on the NBN (or equivalent) at various locations and with a number of students & teachers to find out how NBN speeds can enhance the learning experience in virtual worlds.

The project met the main aims & objectives in the following ways;

- The virtual world space was trialled on numerous occasions by teachers and staff on various locations (Coffs Harbour campus, Taree campus, Armidale, Adelaide, Poland, Canada)
- Feedback from students & teachers was collected, indicating that the majority enjoyed the experience and found it engaging and most felt that their confidence in using new technologies has risen making them much more likely to try new & unfamiliar technologies in the learning environment and the workplace.
- The virtual world was tested on a 'true' NBN connection in Armidale, ADSL2+ (heavily-filtered) speeds in Coffs & Taree, and on an AARNET connection and the differences compared. Testing indicated that the faster speeds make a difference in terms of lag & dropouts (nil on faster bandwidth) and the ability to move and build 'in world' quickly. The higher bandwidths provide a much more robust experience.

1.4 The team

Pre-existing knowledge

Prior to the project, team members' knowledge of high speed broadband technology was limited to the knowledge that the NBN is coming our way, that "other countries seem to have it – why doesn't Australia?", and that it is expected to make online delivery quicker and easier when it *does* arrive. No other detail about the technology being used for training was known.

Expectations

The team expected faster downloading and uploading of all files including high level graphics files, quicker (almost instant) loading of web pages, and the ability to use virtual world and web conferencing-type software simultaneously without lag or dropouts. What the team were really looking for was 100% engagement of students in an online environment which experienced no technical issues at all – they were after a fast, unhindered online learning environment where the focus was on the learning rather than getting the technology to work.

These expectations influenced this choice of project 100%. Previous experimentation with the Second Life platform back in 2008 caused frustration and subsequent abandonment of the research and trial. The expectation this time is that we will be able to build on this work and develop further training facilities in the virtual world 'OpenSIM' space.

Competency & experience

The virtual world platform was a first for all teachers involved in the project. They required training & support all the way through. But this was expected by all parties right from the start of the project. None of them had ever considered teaching in this type of environment before so they knew they'd need help.

Support and training from the developer of the virtual world, and additional, longer term, ongoing support by NC TAFE's eLearning Resource Development team was built into the initial planning of the project.

It did take us a bit of time to get software set up and logins settled – more than we expected.

What did surprise us though was the apparent lack of tech-savviness of some of the students and with some, the hesitation to have a go once 'in world'. The teachers were pleased to have had their own 'teacher' training sessions prior to working with the students because they really needed to be able to assist students individually many times.

2.0 The Journey

2.1 Part A: Getting started

Finding connected venues

This turned out to be one of the more disappointing aspects of the project because of the time & effort spent by multiple (ICTU) staff members trying to set up an NBN-equivalent network after it was discovered that there would be no sites connected in Coffs Harbour within the project timeframes (originally it was expected that there would be at least one site in Coffs Harbour on which we could have tested on the NBN). In hindsight I think the requirements for this project were premature and projects that involve testing on something like the NBN in order to 'showcase' its capabilities should be offered only when the technology is actually available in the regions that it's expected to be tested on. It's like asking someone to reach the top driving speed of a 2012 model Ferrari in a 2006 Ford Escape and being successful in the process.

In the end we were able to locate some willing TAFE teachers in Armidale who visited our students 'in world' to perform speed tests on their NBN connection. Teachers from Tasmania Polytechnic were also organised to log in on an NBN connection but had to pull out at the last minute.

Getting connected

Our only option for an NBN-equivalent connection for our students, none of whom had NBN internet connections at home, was to remain on-campus on a wireless network. Our TAFE internet works on ADSL2+ bandwidth strength but the strength of this bandwidth is reduced by the many filters placed on it because of the access provided to schools (TAFE & schools share the same network). Virtual world access is blocked by DEC so we were faced with two major issues:

1. Getting unhindered internet access on campus
2. Getting full strength ADSL2+ bandwidth

Achieving the unhindered internet access was tackled first. Our ICTU was able to create a safe, unfiltered network that enabled us to use the virtual world software. This took some time to set up and test, but it's now working extremely well on Taree and Coffs Harbour campuses. ICTU are able to turn this access on and off (on a campus by campus basis) and they've been able to apply it to only certain makes and models of laptops.

Coffs Harbour's NBN cabling is still under construction at the time of compiling this report and it became apparent early in the project that testing on the NBN itself would be impossible there as deadlines for enabling some sites in Coffs Harbour were delayed. Testing of download & upload speeds on both Coffs & Taree campuses revealed a lack of bandwidth strength and further investigations identified this problem to be caused by the many filters imposed on the DEC network. Our ICTU then had to investigate other options (ie: partnership with SCU using their AARNet OR setting up a VE project-specific BDSL 'pipe').

After much investigation, a VE project-specific BDSL 'pipe' was approved. Lengthy negotiations with Telstra have ensued and the connection is now being implemented (May 2012). However, this implementation has coincided with some unrelated localised bandwidth issues on some North Coast campuses (mainly Coffs Harbour), and these are causing major disruptions to our internet service (sudden and long internet slowdowns due to severe and widespread caching issues). This is impacting now on the implementation of the BDSL connection and has made testing on this campus impossible before the close of this project. An urgent testing environment was organised at Southern Cross University on their AARNET connection and was carried out 3 days before the end-project date with excellent results.

Download & upload speeds

We used www.speedtest.net to test download & upload speeds on all sites every time we were 'in world'.

<p>ADSL2+ (heavily-filtered)</p> <p>Speeds tests indicated inadequate speeds on both campuses throughout the life of the project.</p> <p>Download speeds ranged between 3.0–18 mbps Upload speeds ranged from 0.6–9 mbps</p>	<p>Substantial lag and slowness experienced (multiple comments made by students in feedback). Occasional dropouts (avatars automatically logged out of the platform).</p> <p>Frozen screens when using the platform with another powerful program required for audio and screen share (ie: Adobe Connect).</p>
<p>NBN 'pure' connection</p> <p>At the same time as the above recordings were made on Taree & Coffs campuses, teachers in Armidale on an NBN connection recorded;</p> <p>Download speeds: 50-85 mbps Upload speeds: 29-30 mbps</p>	<p>One teacher mentioned that the experience was no different to her ADSL2+ (unfiltered) connection at home.</p> <p>Another test was made by the project manager of this project on the same NBN connection in Armidale using Adobe Connect to train students 'in world'. The experience was fast and 'smooth'. No frozen screens , lag or dropouts over a 3 hour testing time.</p>
<p>AARNET connection</p> <p>Upload speeds: 32.61 - 72.82 Download speeds: 7.05 – 75.14</p>	<p>An IT guy in the room explained that the random low download speeds may have been because at that time a lot of Uni students were accessing the connection at the same time and they tend to do a lot more downloading than uploading when accessing the internet.</p> <p>We had 10 people 'in world' for an hour. They were IT teachers who got right into building and rezzing objects so were uploading graphics etc non-stop.</p>



We definitely found working 'in world' much more 'robust' than on our heavily filtered ADSL2+ connection. No lags, no delays, no drop outs – lovely, smooth action.

But we also discovered something unexpected. In the image you can see fluffy white clouds. These are avatars that aren't displaying properly. We initially thought it might be due to bandwidth but it happened again yesterday. When we looked more closely, we realised that it's not bandwidth at all – it was only happening to avatars logged in on the under-equipped, less 'grunty' laptops (which indicates the need for good quality devices along with the bandwidth to make the experience the best that it can be).

The Trials

We ran multiple trials involving one or both campuses as the students worked on preparing their booths for the May 24 Adelaide International Trade Fair.

What we found tricky was trying to coordinate multiple classes of VE students and teachers to be 'in world' all at the same time in order to test bandwidth capability while under pressure (add to that visitors from different regions to test NBN connections & relevant VEA staff). Having teachers who were passionate and keen to be involved in the project helped immensely – they ensured as much flexibility as their teaching programs would allow which obviously contributed hugely to the success of the project.

The trials with students indicated high levels of engagement (informal observations made in the classrooms of students interacting positively with the environment and each other, requesting access outside class time, and thanking support staff for enabling & supporting their activities). One trial involved a combined visit from Michelle Bruniges (DEC Director-General), our NC TAFE Institute Director, the Business Faculty Director and section Head Teacher at the Coffs Harbour campus. Students barely acknowledged the visitors as they moved through the classroom – I suspect some were totally unaware that the visitors had even been in the room – because of their focus on what they were doing 'in world' at that time.

Looking back, I think the lack of NBN-equivalent speeds in the initial trials was of great benefit because it gave us multiple opportunities to experience and test the current speeds in order to compare with the NBN speeds and make a better-informed assessment about the real capacity of the NBN.

Software & Hardware Issues

<p>Imprudence Software – log in issues</p> <p>(Imprudence launches virtual world OpenSIM platform)</p>	<p>The Imprudence software, freely downloadable from the net inside and outside of the DEC firewall, caused a few login issues. The Grid Manager (area where the jokaydia grid platform details are required), often wouldn't automatically populate with the required information as it's meant to and some students had to keep inputting multiple URLs manually before they could log in. Occasionally the Grid Manager details appeared correct but a small, barely-observable space in front of the http:// stopped it from working. On one or two devices the DNS server wouldn't allow a particular student access and we would have to swap that student to another laptop.</p> <p>Some teacher logins created via the avatar registration site didn't work (error on page when submitting request form) and needed to be set up manually by the developer. This caused a bit of toing and froing and retesting which took time.</p> <p>I think it would have been less frustrating and more streamlined to have all the teacher logins created, pre-tested & supplied directly from the developer. After that, teachers could have pre-tested all student logins before students used them (some students went through similar problems which can be a bit dis-engaging).</p> <p>I pre-checked all the guest avatar logins, befriended the avatars and set their 'Home' landmarks prior to handing them out so I knew they worked and knew where they would land on arrival. Guests have experienced no log in issues.</p>
<p>Equipment – not powerful enough and not enough of them!</p>	<p>Because there is currently no working option for us for audio on the OpenSIM platform, we had to use Adobe Connect to communicate verbally. The basic, student Lenovo laptops (L512) being used for this project were constantly delivering the message that the graphics cards were not capable, and in addition, when using the Connect room at the same time as Imprudence, Connect and/or Imprudence would often freeze and fail. We were doing a lot of re-logging in. And this was BEFORE we started using other programs like Photoshop to create graphics files for uploading into the world.</p> <p>The other problem was that, because the ICTU could only provide the special wireless network to a certain make and model of device, we were restricted to only a few machines. We not only needed better machines to handle at least two powerful applications, we also needed more of them (because we needed to be able to test the NBN capacity with as many students logged in and working 'in world' as possible).</p> <p>We were able to locate a few more Lenovo T520 laptops to make up the numbers (still not enough though for the amount of students wanting to work in that environment) – these higher level Lenovos are now used with the combined Imprudence and Connect platforms, providing audio via</p>



	ClearChat microphones to the entire room + screen sharing for training purposes and are coping really well with no issues.
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Internal bureaucracy issues & IT support

I think these two go hand-in-hand in our case.

As previously outlined, TAFE must work behind DEC firewalls due to our connection with schools and learners under the age of 18 (among other things). This causes no end of student profile / login / access issues and frustrations, not to mention the limitations for TAFE teachers in providing innovative and engaging learning experiences easily & seamlessly. Access to ALL virtual world platforms is blocked by DEC despite the fact that some virtual world platforms like Jokaydiagrid are 100% safe and encapsulated (ie: students can't teleport out to a global platform like Second Life etc), and comprised only of educational spaces.

Despite the DEC blocks and inflexible policies on these matters, our ICTU worked exceedingly hard to enable a wireless network that is unfiltered but implemented safely, specially for this project. Without this, the project would have been entirely impossible. What the DEC firewall and its inherent difficulties has caused in this case is a lot of time & money spent on finding ways to enable more accepted and expected learning methods, and a lot of embarrassment when trying to connect with external organisations who don't suffer the same issues.

Our ICTU placed themselves at our beck and call for this project and pulled out all the stops to make it happen. For other organisations in a similar position, I would advise getting your ICTU completely on side prior to signing the contract for funding and allow plenty of time in the project to work on this side of things (ie: testing & re-testing).

I know that our ICTU battled internal bureaucracy for the duration of the project but further details have not been disclosed to me personally.

Other issues

Not issues; more so 'lessons learned' and a couple of recommendations to help you avoid issues arising...

I think that having a dedicated project manager to focus on getting this kind of project up and running, coordinating meetings, liaising between teachers, students, partners, ICTU staff members & developers etc is crucial. There is no way someone in a teaching role would have had the time to manage this project – it has certainly taken up the projected hours + more.

I think an important aspect of this also is that the project manager in this case has extensive experience in online resource development and thus has a more than basic understanding of how all kinds of online systems and platforms work (and even more importantly, how to match the type of course content and activities with the appropriate technology) – working on a virtual world platform involves training and support above what's required for the more well-known and more commonly-used platforms and applications.

2.2 Part B: Running the Program

Reliability of the infrastructure

Wireless connection

Once established (it took a month or so to test and re-test it in order to get to this point), the special, unfettered wireless network set up specifically for the project, worked (and continues to work) with 100% reliability in terms of connection to it (no issues), maintaining connection (no issues), and strength (strength excellent when in close proximity to the access point). It's expected that this reliability will continue into the future for use in this type of learning environment at NC TAFE. Connection strength was significantly reduced when students were asked to connect to it further away from the access point, especially as more students connected (we had to move students to a room directly under the wireless access point).

NBN connection

We weren't able to use an NBN or AARNET connection for more than a few hours at a time and these opportunities only occurred a couple of times during the life of the project so in terms of commenting on its reliability over a long period of time, we can't comment.

However, when using the NBN connection in Armidale (3 hours) and the AARNET in Coffs Harbour (1 hour), reliability of the connection was certainly apparent. The connection felt robust and smooth, no indication at all that it might drop out or fail at any time. This was in contrast to the ADSL2+ (filtered) connection that often felt 'shaky' and did actually cause 'drop outs' randomly without warning.

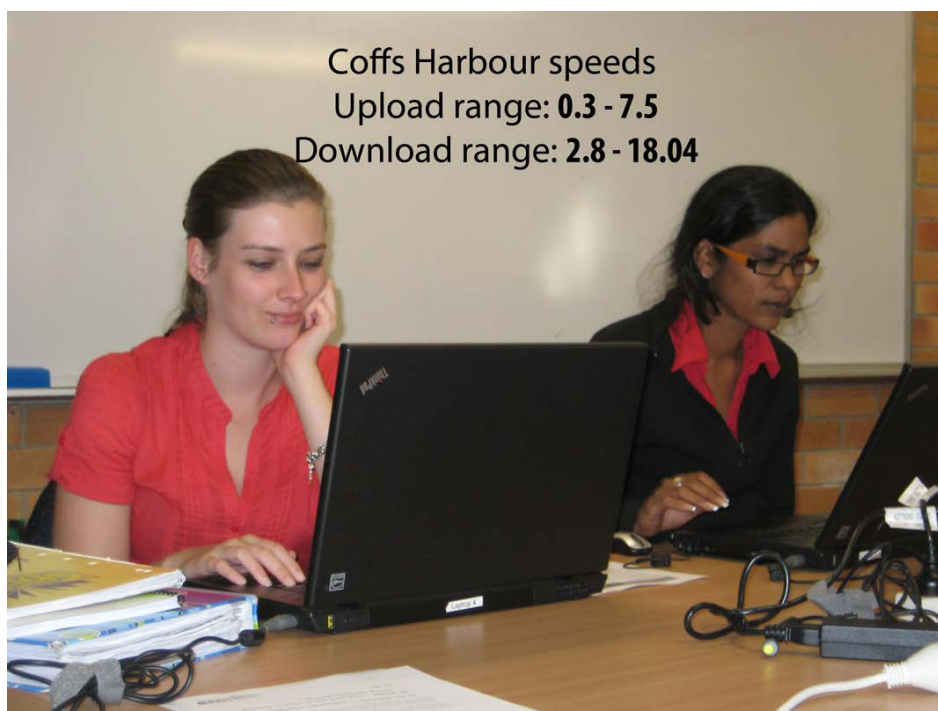


Delivery problems

The **wireless network** had trouble coping at certain times (see previous comments). This caused delays in settling into the training environment and subsequently, delays in implementing training and support programs. Increased numbers of students utilising the network simultaneously when not directly underneath the wireless access point did create issues in terms of loading Imprudence and using Adobe Connect. This was rectified by moving closer to the access point.

Not being able to use computers already set up in classrooms (having to use specially-enabled **laptops in specific locations** under wireless access points) meant significant additional effort in setting up for classes. Also, ensuring availability of the laptops and certain rooms in multiple locations all at the same time was not always easy. These conditions meant reduced delivery time 'in world' (compared to what we could have had if we weren't having to compensate for the DEC blocks).

Slow bandwidth speeds (prior to NBN-equivalent 'pipe') combined with under-resourced devices significantly slowed delivery because of time wasted waiting for screens to load, waiting for avatars to 'unfreeze', having to reboot and restart Imprudence when too much activity (especially once students became confident with rezzing & building objects) sapped bandwidth, and when sound or shared screen visuals were lost in the Connect room during training.



Software /Hardware issues during delivery & IT support

The special unfettered wireless network was settled during the setting up and trialling phase. No further issues were experienced with the software after the setup/trial phase. Prior to this 'workaround' wireless network, delivery on campus was impossible due to the DEC firewall disallowing access to virtual worlds.

But due to the lengthy negotiation & implementation process our ICTU had to go through for the NBN-equivalent BDSL 'pipe' that we needed, followed by the unrelated connection issues on our local campus late in the project, we weren't able to test on our own connection and had to make an 11th hour dash for Southern Cross University where we tested on their AARNET connection.

Support from our ICTU was undoubtedly one of the highlights of the project. Even though it was difficult to arrange the networks and connections we needed, the ICTU bent over backwards to support the project and spent a lot of time and money organising the special wireless network and the BDSL connection which we never got to test on for this project but which we will use into the future as we continue to utilise the virtual world learning environment.

Ongoing access to connected venues

As already explained, Coffs Harbour and Taree had no access to NBN connections. We were, however, able to find some TAFE teachers in Armidale who willingly joined us 'in world' once to test NBN speeds and capability briefly. We also approached other educationalists at UNE and Tasmania Polytechnic on NBN connections to do the same but they were unable to join us at the last minute.

This access to connected venues was fleeting and limited in terms of availability of people and timeframes that suited all parties. I requested additional meetings 'in world' with NBN connected sites but was unable to pull it off in the end for the same reasons mentioned already.

Access to connected venues was one of the most difficult things to arrange in this project because a) there aren't many; and b) organising and liaising to make it happen when everyone (including the location) is available.

2.3 Part C: Wrapping up

Costs to the organisation

Delivering in a virtual world environment has been a completely unfamiliar and new experience for all parties (including the ICTU) and I think the stand out cost over and above alternative or previous delivery models is support (IT and Resource Development Officer). The hard work's done now though, and although Hub (Learning Resource Development Officer) support will continue in the form of administration and training, ICTU support will only continue if issues arise with the wireless network and/or the ADSL2+ dedicated 'pipe'. Ongoing financial costs will be quite large however, as we pay for and maintain the ADSL2+ dedicated 'pipe' until such time as the NBN connection becomes available.

Another additional cost is the ongoing maintenance and administration of the virtual world SIM. Our 'world' is comprised of two SIMs (a training centre and a conference centre). Ongoing basic support (ie: logins, advice etc) for one SIM will now cost the institute \$25 per/month. Any training or asset development, programming or higher-level support (which is what we expect) will be costed out at a starting rate of approx \$100 p/hr.

Cost savings will occur for the teaching sections who run Trade Shows at a physical location. These sections have, in the past, raised funds for travel costs to transport students to Trade Show locations. They will now have the option to remain at their home locations and participate in Trade Shows online.



Skill developed by team

This project has seen some huge shifts in capability and confidence in every single participant.

Students have learned completely new skills in using technology through experiencing success in completing some relatively complex tasks. They've managed to build and customise objects 'in world' (not a simple undertaking I can assure you!), design and set up trading booths, worked out ways to communicate & behave in an online environment, used simple & complex programs like MS Publisher, PPT and Adobe Photoshop in different ways, and worked out buying and selling processes using unusual and complex methods etc. Student feedback indicates that the majority of students (not all) felt that their confidence levels in using new and unfamiliar technologies increased a lot – enough to feel that they are more likely to try new technologies in the learning environment and in the workplace in future.

Teachers have learned the same skills as their students. But in addition, the teachers have also developed skills in delivering training in virtual worlds – they've seen the use of Adobe Connect modelled as a delivery & communication tool as well and are now more likely to use it in similar ways during online delivery. Teachers in the project have gained in confidence in terms of using online technologies for delivery (including managing students in this type of environment), and because they have a better understanding of the impact of bandwidth on these modes of delivery, they have increased skills in designing delivery schedules and learning programs to match our NC TAFE capabilities (and what capability to ask for to ensure success).

The ICTU team have been pushed to their limits by this project but have learned new ways of delivering networks and connections to meet out-of-the-ordinary styles of online delivery.

The VEA representative on our project team & her counterpart have developed new skills in using unfamiliar technologies. They have also seen new methods of VE Trade Show implementation.

As the **Project Manager**, I've learned how to manage students and training in the virtual world, added to my online facilitation skills and learned a lot about bandwidth and networks and how these things impact on online delivery and learning. I think the biggest thing I've gained is knowledge about how best to apply this type of online environment to productive learning and how important it is to ensure that appropriate levels of support (IT and training) and bandwidth are provided.

Future benefits (The NBN as a learning/teaching tool)

Ability to deliver to large groups simultaneously online	<p>Testing on the AARNET connection with 10 people 'in world' at the same all rezzing and building objects with large numbers of Uni students across a large campus downloading from the internet in other classrooms at the same time, revealed the true strength of such a connection. From this experience all indications show that the virtual world environment could most certainly be used for delivery to large groups simultaneously.</p>
Higher levels of engagement (lower levels of frustration)	<p>Unfortunately testing on the AARNET connection occurred too late in the project for the students involved in the project to trial. And relocating all the students and teachers from Coffs Harbour to Armidale to test in the tiny home office of our lovely New England TAFE teacher who offered his home for the purpose of a test, was impossible. So the students only ever experienced the heavily-filtered ADSL2+ connection and the words 'laggy' and 'slow' appeared as a common theme through the student feedback collected. Frustration was apparent at times.</p> <p>As the project manager, I was the only one (besides some supporting Hub staff) who was able to test on all 3 connections and I can confirm that use of the virtual world on the NBN and AARNET connections was certainly more engaging with no feelings of frustration. Most of the students were fully engaged anyway, even on the 'laggy' bandwidth, so I would assume that engagement levels would be high on an NBN connection.</p>
Enhancement of learning through collaboration and connections further afield than just us	<p>Connecting VE students and teachers from around Australia (Adelaide) and the world (Poland and Canada) in real time certainly stimulated fresh engagement amongst the students who were starting to get a little tired of being 'in world' with just each other and I think this was a real highlight.</p> <p>This connection and collaboration between VE students certainly enhanced the learning environment for our students and is a real future benefit for us.</p>

3.0 Outcomes & measures

3.1 Outcomes of the project

The original intended outcomes were;

Higher levels of student engagement & participation in course content	<p>As mentioned on the previous page, I was able to test on all 3 connections and I can confirm that use of the virtual world on the NBN and AARNET connections was certainly more engaging because of the fast uploads and ease of movement 'in world'. Informal observation showed us that most of the students were fully engaged anyway, even on the 'laggy' bandwidth, so I think we can assume that engagement levels would be high on an NBN connection.</p> <p>Participation in course content was high I think because we matched the purpose of the 'world' with appropriate and relevant activities (ie: activities that can be carried out 'in world' in a practical manner with observable outcomes).</p>
Higher levels of confidence (students & teachers) & desire to use/try new technologies	<p>Student feedback (written) indicated that the majority enjoyed the experience and found it engaging and most felt that their confidence in using new technologies has risen making them much more likely to try new & unfamiliar technologies in the learning environment and the workplace.</p>
Enhanced methods of learning through improved connection & collaboration between VE students online from remote & different locations	<p>I'm not convinced yet that using the virtual world has enhanced the learning for these particular students in terms of a comparison between how they would normally have performed these activities - some student feedback indicated that they 'enjoyed it but no more so than their normal classroom training'.</p> <p>An unexpected outcome of this learning space though was some important lessons in communication. We used text chat when running the Trade Fair and talking with buyers - learners quickly realised that they needed to pay attention to their spelling and grammar a little more, especially when communicating with Polish visitors who had difficulty understanding some of the sentences used. They also realised that their text chat discussions were on display to all for the entire time everyone was 'in world' so making 'smart' comments wasn't really 'kosher' anymore (especially when visitors were 'in world').</p> <p>But connecting VE students and teachers from around Australia (Adelaide) and the world (Poland and Canada) in real time certainly stimulated fresh engagement amongst the students who were starting to get a little tired of being 'in world' with just each other and I think this was a real highlight. This connection and collaboration between VE students certainly enhanced the learning environment for our students and is a real</p>



	future benefit for us.
VE students connecting online nationally	We successfully achieved connections with Poland, Adelaide and Canada during the project. See previous comments about the impact of this.
The offering of a broader range of learning environments	<p>This project has certainly sparked a lot of interest, not only within North Coast Institute, but also from other institutes, across Australia (at the VE International Trade Fair in Adelaide), and internationally (we had VE students from Poland and Canada visiting 'in world' during the International Trade Fair).</p> <p>The interest being shown just within North Coast Institute is indicating that other sections and faculties will want to start using this virtual world environment (ie: Events Management students who can run events online, Tourism & Hospitality students who need to practise customer service skills + more & IT students who need to put their 3D building skills to the test and could build a event centre to specifications provided by students from the other faculties). Although this outcome is not yet realised, such high levels of interest are being shown across the institute in using a virtual world for for teaching and learning that adoption of more virtual world classrooms at NC TAFE is now possible - there's a real willingness to embrace it even from Executive level.</p> <p><u>How was this outcome measured?</u></p> <p>Informal observation – during training, testing and/or program delivery sessions we experienced a lot of 'visitors' to the physical classrooms in Coffs & Taree (ie: various Business teachers & Head Teachers, Business Faculty Director, Director-General, 5 students from an IT class with their teacher, ICTU staff. All expressed 'excitement' at what we were doing – many of them were coming up with their own ideas about how they could use the virtual world for their own delivery and asking when they might be able to start using it.</p> <p>The media release sparked interest from Exec level who contacted me for additional images and information. We will now roll out access to the virtual world in Semester 2 2012 to all faculties and implement a project-based trial experience for each one. ICTU's positive feedback & support during their involvement in the project indicates that they are now better placed to support this style of delivery and keen to do so.</p>

Further unintended outcomes for the project

Feedback and observation indicates that most of our intended outcomes (above) have eventuated or will eventuate to differing degrees.

But as the project reaches it's conclusion, I think the following outcomes are now relevant;

- Possible improvements to local ICT systems because of changing attitudes towards enabling our systems and networks to improve our students' learning environments
- Staff members able to make informed decisions about new online delivery modes and technical requirements through improved knowledge & understanding of the NBN and virtual world environments

4.0 Lessons Learned

4.1 Key successes

Get ICT people on board early	<p>I made sure that our ICTU was aware of the needs of this project (should we be lucky enough to be funded) at the application stage and had someone at management level reiterate the importance of the IT requirements.</p> <p>It still took a lot of time to work out the network and connection solutions for the project but I believe that it would have been much worse (or wouldn't have happened at all) if pre-engagement of the ICTU in the project hadn't been sought back at the application stage.</p> <p>Our advice:</p> <p>Go and visit your IT team, take Oreo Cream Cheese slice (recipe available on request), talk nicely to them, (TAFE people) be aware that your ICTU's hands are often tied – be understanding of their issues – it's not always their fault – be patient and encouraging while they work it out. Make sure they know what your application or project is all about and what the criteria are. Ask them for their advice – get their buy-in. Give them their own avatars and meet them 'in world' just for fun!</p>
Creating a groundswell of interest in the use of virtual worlds in education	<p>The interest being shown just within North Coast Institute is indicating that other sections and faculties will want to start using this virtual world environment (ie: Events Management students who can run events online, Tourism & Hospitality students who need to practise customer service skills + more & IT students who need to put their 3D building skills to the test and could build a event centre to specifications provided by students from the other faculties). Although this outcome is not yet realised, such high levels of interest are being shown across the institute in using a virtual world for for teaching and learning that adoption of more virtual world classrooms at NC TAFE is now possible - there's a real willingness to embrace it even from Executive level.</p> <p>I've been asked to prepare a 'marketing' plan outlining how use of the virtual world environment can now be taken forward into the future. ICTU's feedback from their involvement in setting up an NBN-equivalent connection is indicating that they are now better placed to support this style of delivery.</p> <p>Our advice:</p> <p>Publicise what you're doing. Invite staff into your world to have a look and give you feedback (ask them to help you test stuff). Provide staff with their own avatars and prepare really simple instructions. Pre-test all avatars to ensure a streamlined entry into your world (take steps to minimise issues).</p>



	Set up a project site that's engaging with images, screen shots, videos etc. Invite people to contact you.
Better understanding of the need for NBN or NBN-equivalent connections to provide appropriate networks and connections to support virtual world learning	<p>At the application & beginning stages of the project it was assumed that our existing ADSL2+ connection at TAFE would deliver bandwidth strengths required for the project. Essentially it should, but after initial testing of download & upload speeds (ranging from 0.6 – 18mbps), it became apparent that the filters placed on the ADSL2+ connection was hindering the project. And it obvious from the drop outs and lags 'in world' that we would need better access.</p> <p>I think this project has been successful in changing some of the attitudes to the blocks and filters that hinder our daily lives at TAFE and that those in ICTU who have been supportive of what we've been trying to achieve, have learned a lot and are better placed now to support us further.</p> <p>Our advice:</p> <p>As above.</p>
Matching the 'right' type of course content with virtual world learning	<p>We've learned from this project that not all course content is deliverable or productive in the virtual world environment. The virtual world lends itself to hands-on activities that emulate real world activities that are purposeful and practical. The success of the Virtual Enterprise Trade Fair in the virtual world lies in the way it has a practical purpose and application. The activities usually undertaken in the physical classroom in setting up and running a Trade Fair are easily transferred to the virtual world environment (ie: setting up a booth, creating promotional material, buying and selling, meeting and greeting visitors etc). In a practical sense, it enables students unable to travel to attend a physical Trade Fair, the opportunity to participate from wherever they are physically located in real time.</p> <p>Other practical applications might be a lesson in OH&S, managing an event, working in a retail store or community pharmacy etc. But I wouldn't run a cookery class in there (you can't taste the food!), or teach accounting skills.</p> <p>Our advice:</p> <p>When deciding whether or not to use the virtual environment as a learning space I would suggest you ask yourself:</p> <ul style="list-style-type: none"> • Will it serve a purpose over and above what we're achieving already in the classroom (ie: will it motivate or engage learners to the point where we get better outcomes? Will it enable flexible students to access the learning more successfully?)? • Am I doing it 'just for fun'? If you are, there's no point. • Will the learners learn anything? Our VE students gained technology skills and confidence (employability skills) over and




	above the Trade Show skills they needed.
Changing old-fashioned attitudes about virtual worlds being just for fun	<p>One of our staff members was asked to research the applicability of virtual worlds for teaching & learning back in 2008. Her recommendations were largely disregarded and ignored at that time (partly because of the lack of bandwidth capable of making it a worthwhile venture; but also because Second Life was considered too risky and too much like a gaming environment to be taken seriously).</p> <p>The success of this virtual training environment has shown that it is indeed a learning environment to be taken seriously.</p> <p>Our advice:</p> <p>I would suggest that anyone looking at developing a similar environment gain support from higher levels of management (ask for a guided tour through our environment in the decision-making stages!).</p> <p>Your students (and some of your staff!) will, in the initial stages of using the world, play with their avatars and objects and do silly things with them. This is OK – in the beginning. Make sure you don't use screen shots displaying this behaviour when advocating for your world. If you want to be taken seriously, you need to ensure your images are demonstrating practical application of the world.</p>

4.2 Lessons Learned

Having NBN connections more readily available OR longer project timeframes	<p>The lack of NBN and/or NBN-equivalent connections to test on (within & external of TAFE) created issues for this project. At the application stage we thought we'd have an NBN site established in Coffs Harbour which we could have used to test on but that was not to be. We also assumed that our ADSL2+ connection within TAFE was adequate. But once into the project, it became apparent that our ADSL2+ connection was hampered by all the DEC filters placed on it. So, with our ICTU dealing with DEC blocks and policies to try and establish an unhindered wireless and BDSL connection for the project, it became a time-consuming and frustrating 'mission' to try and find willing people in Armidale and Tasmania to try and test with on a real NBN connection.</p> <p>Luckily though, our 11th hour test on the AARNET connection gave us some good data but not as good as it could have been had we been able to run the project for a little longer and get comparative feedback from the same students who worked 'in world' on the ADSL2+ connection.</p> <p>Our advice:</p>
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	Have a Plan B and organise early at the start of your project.
Make your 'world' as transferrable as possible	<p>The virtual world environment we've created is obviously custom-built for VE students to run their Trade Fairs but is also generic enough to be used by Events Management students to plan and manage events in, Retail and Community Pharmacy students to set up 'shops' and/or dispensaries there and the training centre and auditorium to run any kind of training and presentations you like.</p>  <p>Our advice:</p> <p>If you're going to build your own 'world', consider how it may be used in the future – who might want to use it etc (we've been overwhelmed with the interest being shown) BEFORE you put your order in.</p>
Managing learners	<p>We found that one or two of the students treated the environment like a game and spent most of their time editing their appearance and flying around making gestures and interrupting others.</p> <p>We also found that students struggled with working out where everything was in relation to each other 'in world' and would get left behind – time would then be spent teleporting people around.</p> <p>Our advice:</p> <p>Set the ground rules just like you would in a normal classroom. Don't expect that your 'physical classroom' rules will be applied 'in world' by your learners. It's a different space and they tend to behave differently. But also give them time to have fun in there so they engage with it fully.</p> <p>Expect to use your quiet rooms to 'talk' with your learners. The Trade Hall and workroom gets so busy that listening is something they forget to do when they're busy creating objects and undertaking activities.</p> <p>Take students on a guided tour and show them how to use the map. Get them to set teleport locations at the important places for themselves early</p>

	so they can relocate quickly and easily.
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5.0 Passing it forward

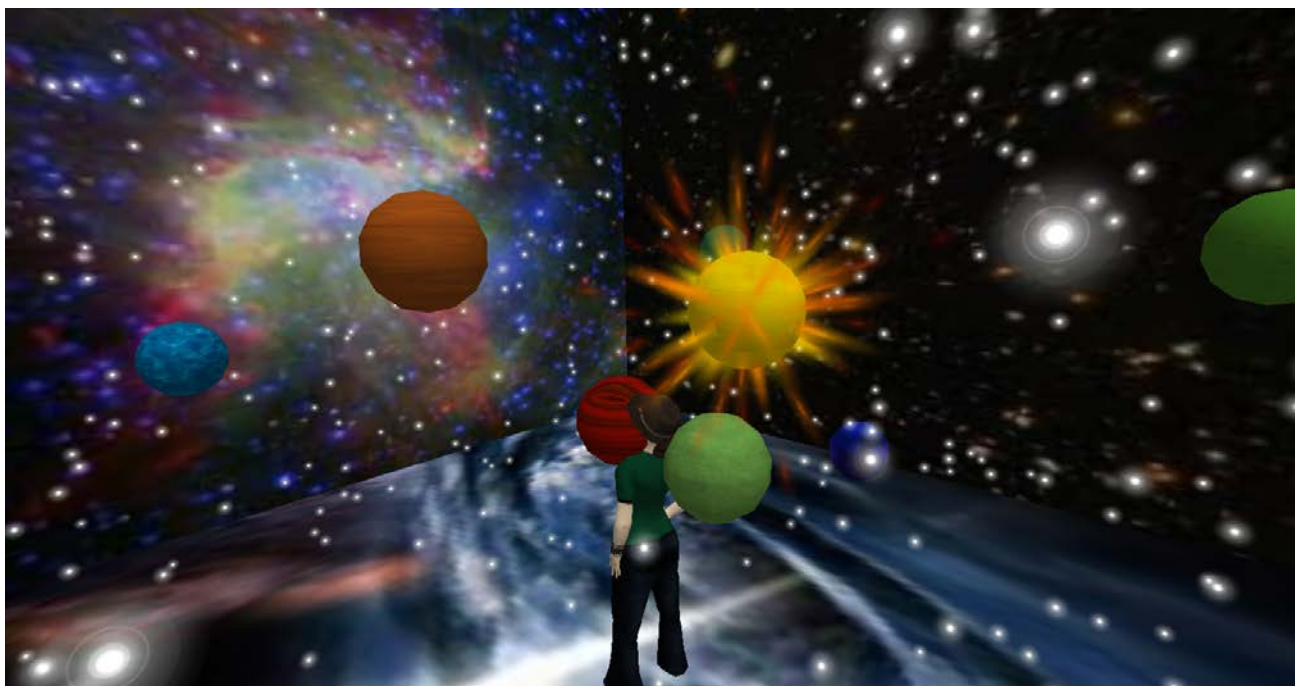
5.1 What can be transferred

The resource

A zipped copy of the buildings (Trade Hall/Conference Centre and Training Centre) is available for use by others. They currently inhabit two SIMs or 'islands'. You would need to 'rent a SIM' on JokaydiaGrid [<http://jokay.wikispaces.com/home>] to extract the copy to (you can rent one SIM and only extract the Conference Centre or the Training Centre OR rent two SIMS and extract both buildings. At the time of writing this report, a monthly rental for a SIM costs \$25 and includes basic support and avatar log in set up.

Here's a very visual Prezi (with very few words and lots of 'in world' screen shots) that shows you what you'd be getting:

http://prezi.com/fiiwn5ussec4/virtually-enterprising-project/?auth_key=059966c404e352463f449ef6e70133f98077dc8f



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